UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

8337170735

ENVIRONMENTAL MANAGEMENT **5014/01**

Paper 1 **October/November 2007**

2 hours 15 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
Protractor

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
Total	

This document consists of **27** printed pages and **1** blank page.

Section A

1 **(a)** The photograph shows a volcanic area in New Zealand used for developing geothermal power.

(i) What shows that this is a volcanic area?

.....[1]

(ii) What is being used for the transfer of the source of energy to the power station down the valley?

.....[1]

(iii) Why does a valley location help the transfer?

.....[1]

(iv) What disadvantages does the transfer of this energy source have for the area?

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.....[2]

(b) Geothermal energy cannot be developed in all areas of the world. Describe the underground conditions necessary for its development and how people use them.

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(c) What are the advantages of geothermal energy?

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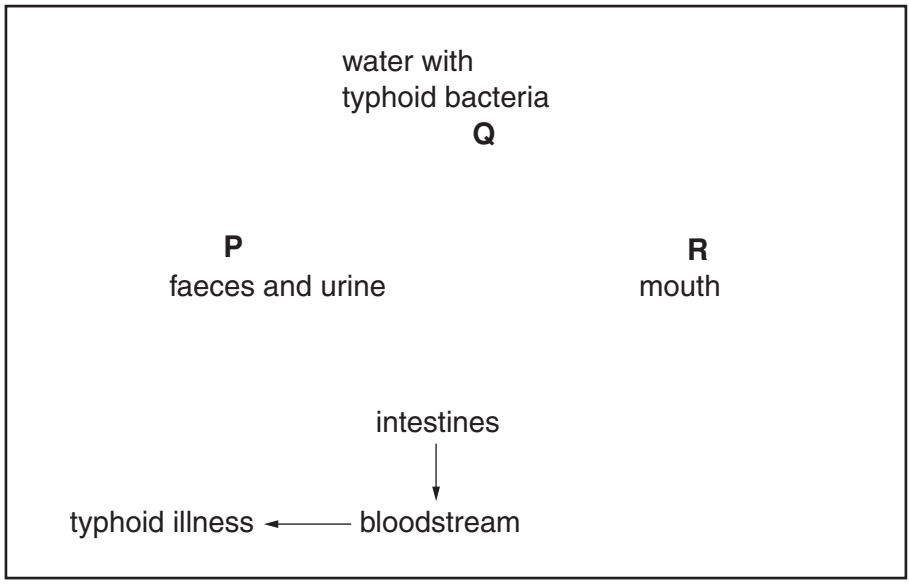
.....[2]

2 **(a)** Look at the diagram showing words that can be used to describe the cycle of the waterborne disease, typhoid.



Key

P Q R points at which the cycle can be broken

(i) Complete the diagram by adding arrows to show the cycle of the disease. [1]

(ii) **P**, **Q** and **R** on the diagram show points at which the cycle of typhoid can be broken. The table below shows methods used to break it. Match these methods with the points by writing the correct letters in the table.

method	point on diagram
drugs	
install sanitation	
provide a clean water supply	

[2]

(iii) Explain why methods of breaking the typhoid cycle are not used everywhere in the world.

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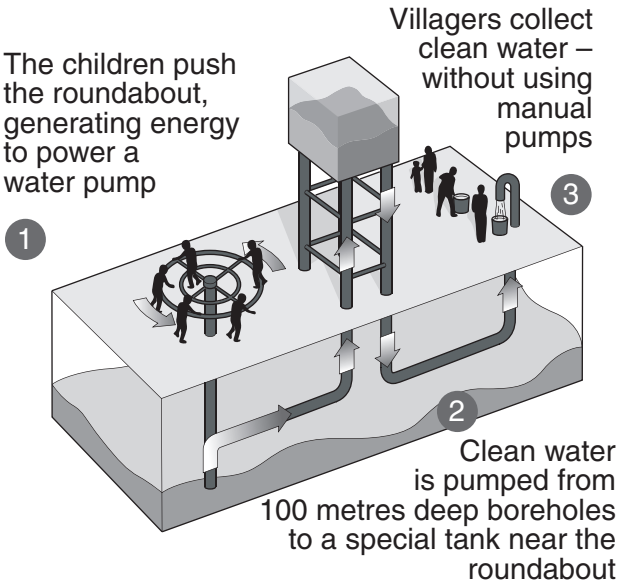
.....[4]

(b) The diagram shows a new device for supplying water that is being used in some African villages. The Play Pump costs an average of one US dollar a day to install and maintain for 15 years.



What are the advantages of this method of water supply?

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.....[3]

3 **(a)** The diagram shows part of a label designed for a pesticide container.

CAMSPRAY

Systemic insecticide for the control of aphids on fruit trees

FOR USE ONLY AS AN AGRICULTURAL PESTICIDE

Rates of use

100 cm^3 CAMSPRAY in 200 litres of water. Apply to leaves until run-off.

Timing

Apply when aphids are first seen. Repeat at 10-14 day intervals.

Harvesting Interval

Allow a minimum of two weeks between the last application of CAMSPRAY and harvesting the crop.

PRECAUTIONS

1 Wear protective clothing

8 Keep livestock out of treated areas for 7 days.

9 Do not contaminate ponds and waterways.

10 Do not apply at flowering stage.

Which instructions indicate that the pesticide can harm the environment?

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.....[3]

(b) (i) What will be the consequences for the environment of over-using the pesticide?

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.....[3]

(ii) Describe how farmers can control pests in less harmful ways.

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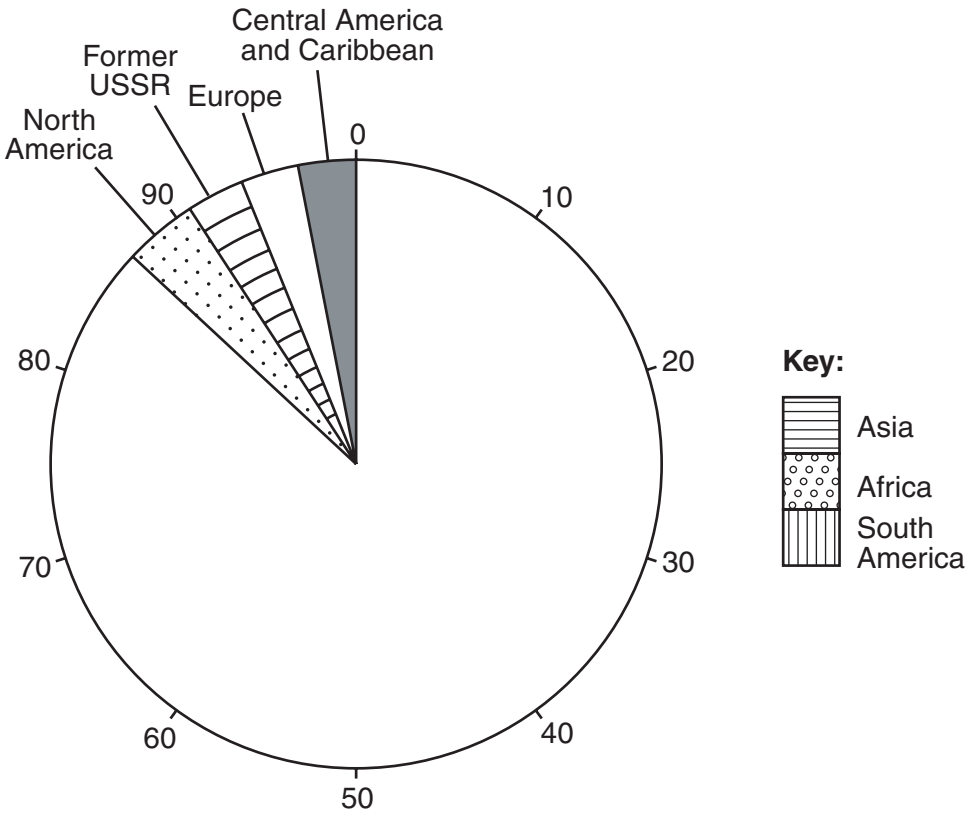
4 (a) (i) The pie chart shows global fuelwood production in 1998.



Complete the pie chart using the information in the table below. Use the key provided.

continent	fuelwood production
Asia	50%
Africa	27%
South America	10%

[2]

(ii) How does the amount of fuelwood used in the developing world differ from that in the developed world?

.....[1]

(b) What social and environmental problems will be caused by an increased use of fuelwood?

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(c) How could the use of fuelwood be made more sustainable?

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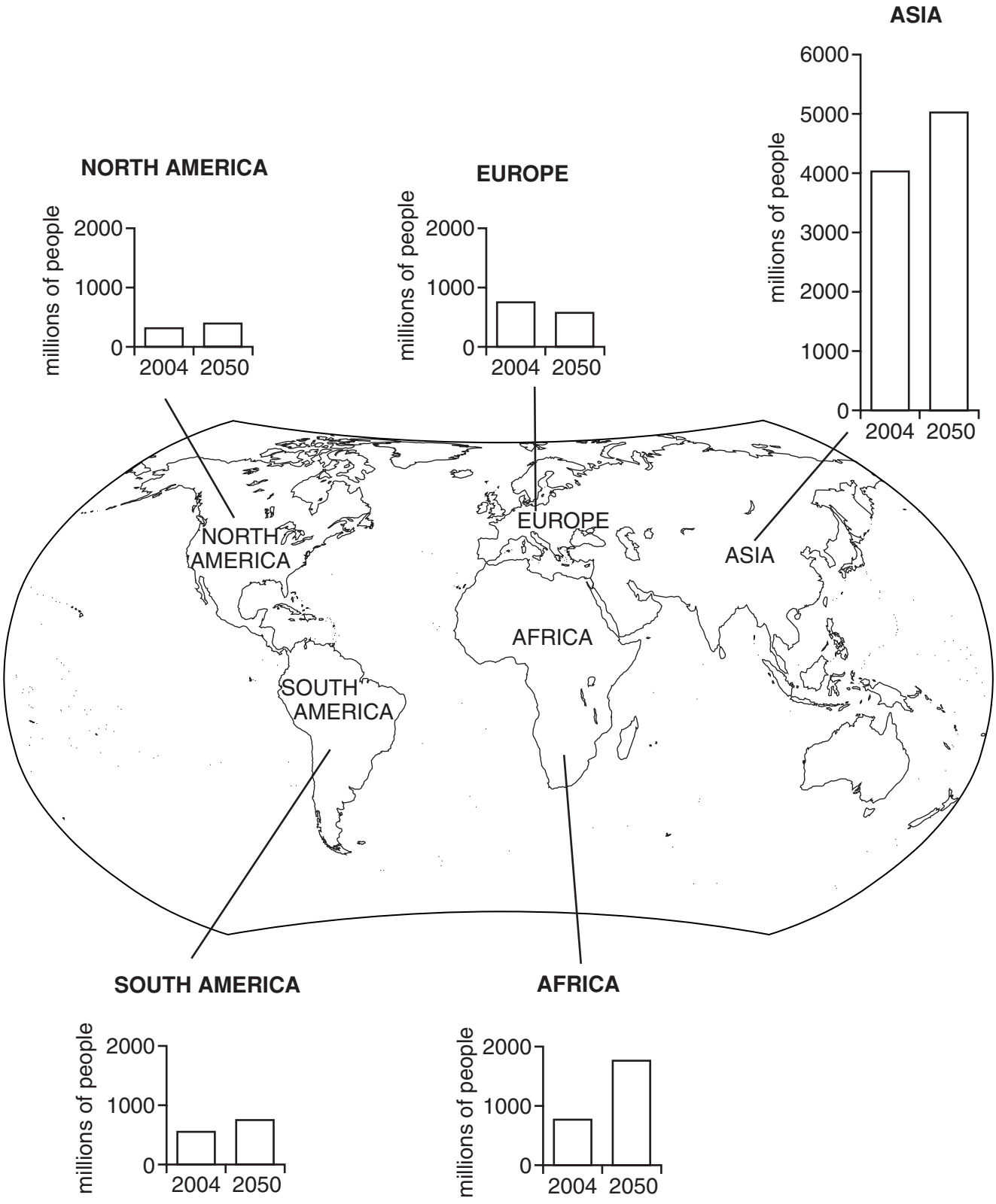
Section B

5 Look at the world map which shows total population in 2004 and expected population in 2050 for five continents.

Population change 2004–2050



(a) (i) By how much is the population of Asia expected to increase between 2004 and 2050?

.....[1]

(ii) Compared with the other continents, what is expected to be different about population change in Europe from 2004 to 2050?

.....[1]

(iii) In which continent is the fastest rate of population growth expected between 2004 and 2050?

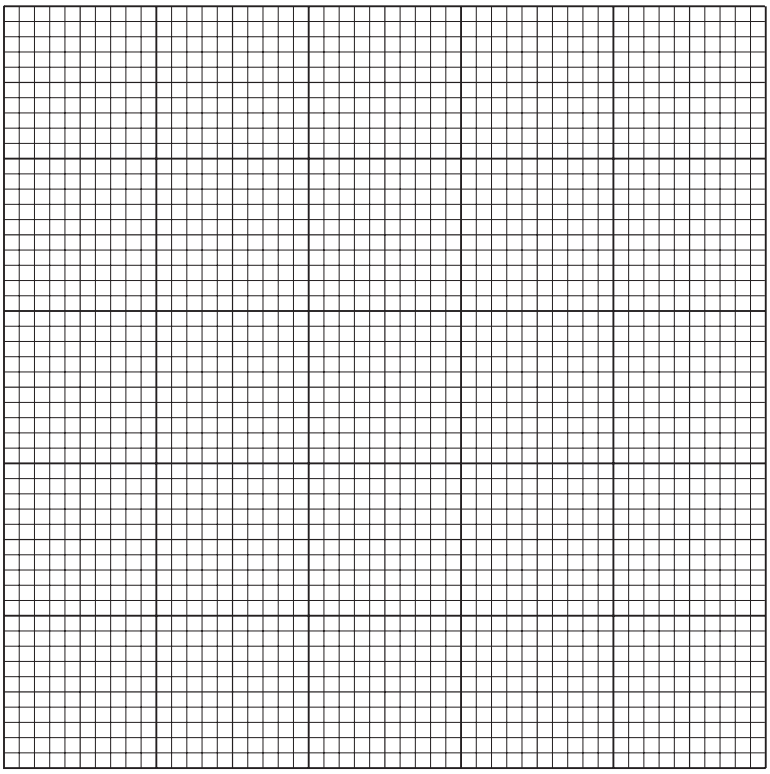
.....[1]

(b) The two countries in the world with most people are China and India. The table shows population data for them.

Total populations in China and India

	2004 Population (millions)	2050 Population (millions)
China	1300	1400
India	1100	1530

(i) Draw bar graphs to show the population data in the table.



[3]

(ii) What significant change is shown between 2004 and 2050?

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.....[1]

(iii) Give reasons why population growth is higher in some countries than in others.

1. Reasons why population growth remains high in some countries.

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2. Reasons why population growth is much lower in other countries.

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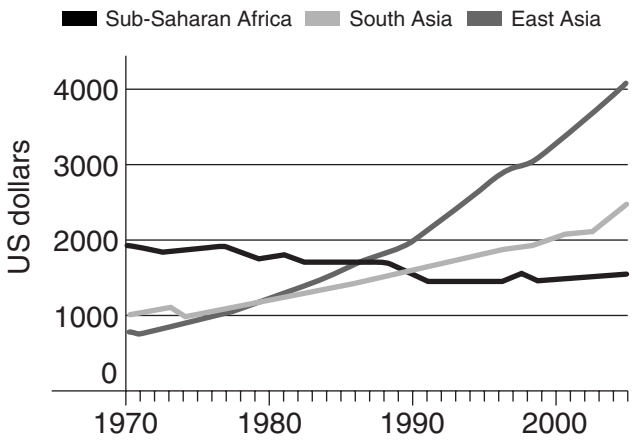
(c) World population is expected to grow from 6.5 billion people today to 9 billion by 2050. Population growth causes economic, social and environmental problems.

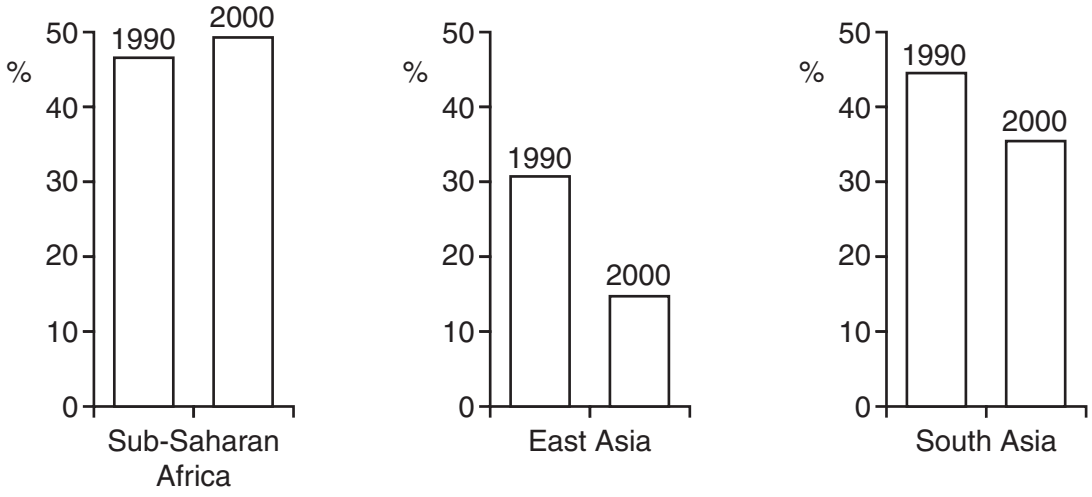
Economic problems in countries in sub-Saharan Africa

Location

Income per head in Sub-Saharan Africa and Asia



Changes in % of people living on US$1 per day



Describe what the graphs show about income in sub-Saharan countries compared with other developing countries in Asia. Use values from both graphs to support your answer.

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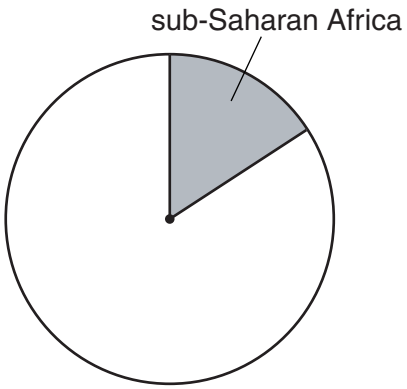
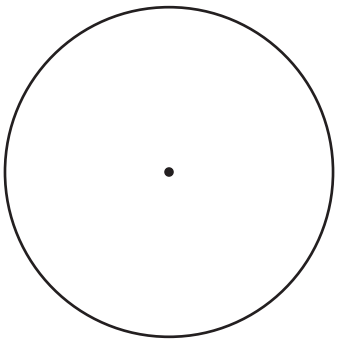
(d) (i) **Percentages in sub-Saharan Africa**

Total world population	– % living in sub-Saharan Africa	**15**
World population suffering from hunger	– % living in sub-Saharan Africa	**25**
World total of health workers	– % working in sub-Saharan Africa	**1**

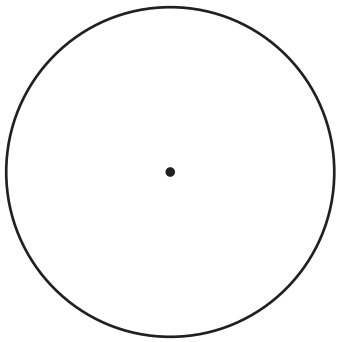
Total world population



World population suffering from hunger



World total of health workers



Key:

sub-Saharan Africa

rest of the world

Complete the two pie graphs by showing the percentages in sub-Saharan Africa for hunger and for health workers. Fill in the key. [3]

(ii) What are the likely effects of these percentages on levels of disease in countries in sub-Saharan Africa? Explain your answer.

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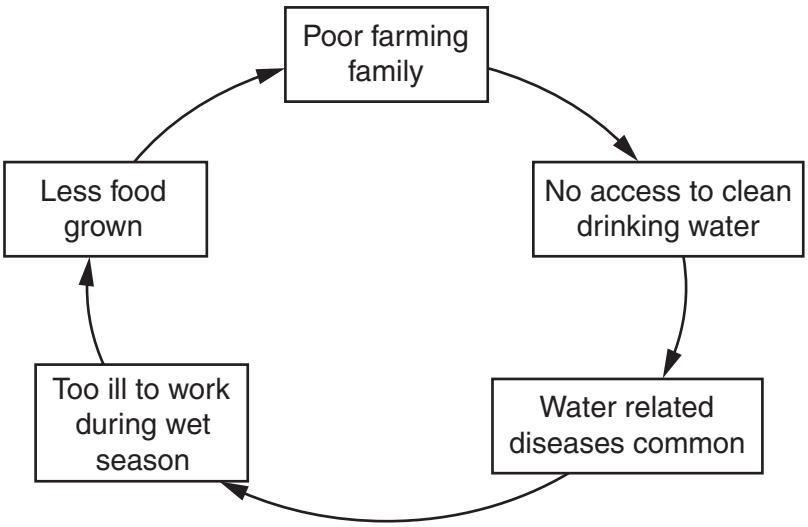
(e) The diagram below shows one example of a poverty cycle in poor countries such as those in sub-Saharan Africa.

Poverty cycle



Poverty cycles are often called poverty traps. Why is it difficult for poor people to break out of a poverty cycle like the one shown here?

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.....[2]

(f) Aid might be one way of helping people to break out of this poverty cycle. Three types of aid are listed below.

A Food aid – basic foods supplied free
B Development aid – money and equipment given for sinking a well
C Farm aid – high yielding seeds and new machines provided

(i) Which type of aid do you consider to be the best for people in this poverty trap? Give reasons for your choice.

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(ii) Which type of aid might be the least useful? Why?

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(g) One environmental problem is soil erosion. Look at the photograph.

Colca Valley in the Andes mountains of Peru

(i) Describe the natural features which show that there is a high risk of soil erosion in this area.

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(ii) Using the photograph, describe what has already been done in the area on the photograph to reduce the likelihood of soil erosion occurring.

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(iii) What else might farmers in this area do to prevent soil erosion? Describe two soil conservation strategies which could be used by farmers in this area.

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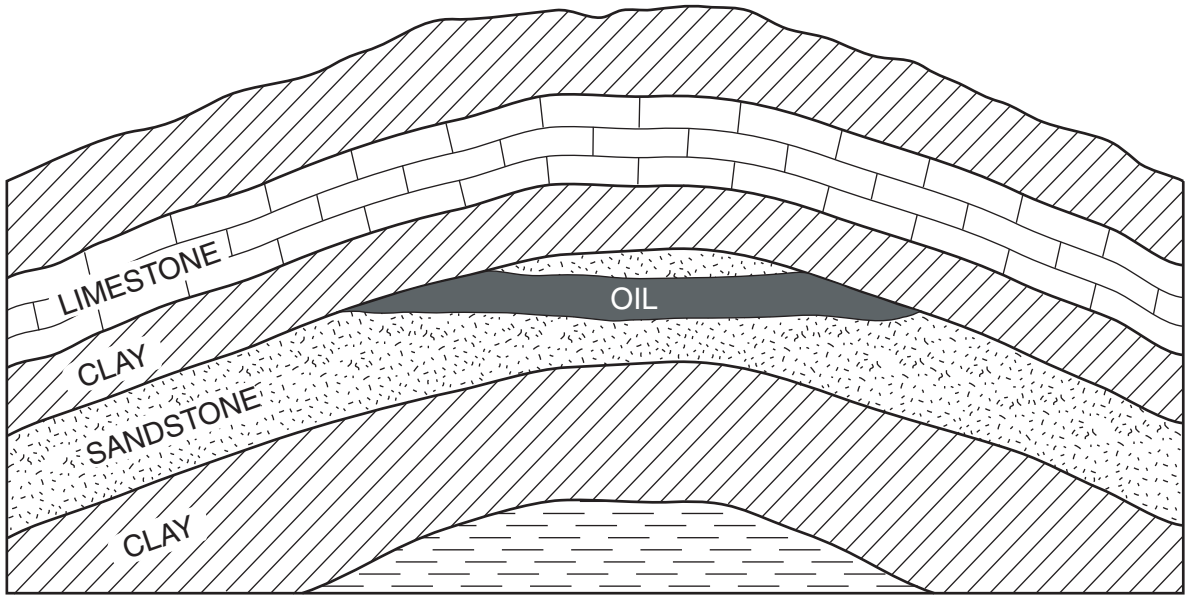
[Total: 40 marks]

6 **(a)** Look at the diagram of an oil trap.

Oil trap



(i) Which type of rocks are shown in the diagram? Circle one answer.

igneous sedimentary metamorphic [1]

(ii) What was oil formed from?

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(iii) Why is oil trapped here?

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(iv) Explain the methods used by oil companies to extract oil from underground traps like the one shown.

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(v) State one danger for people working in oilfields.

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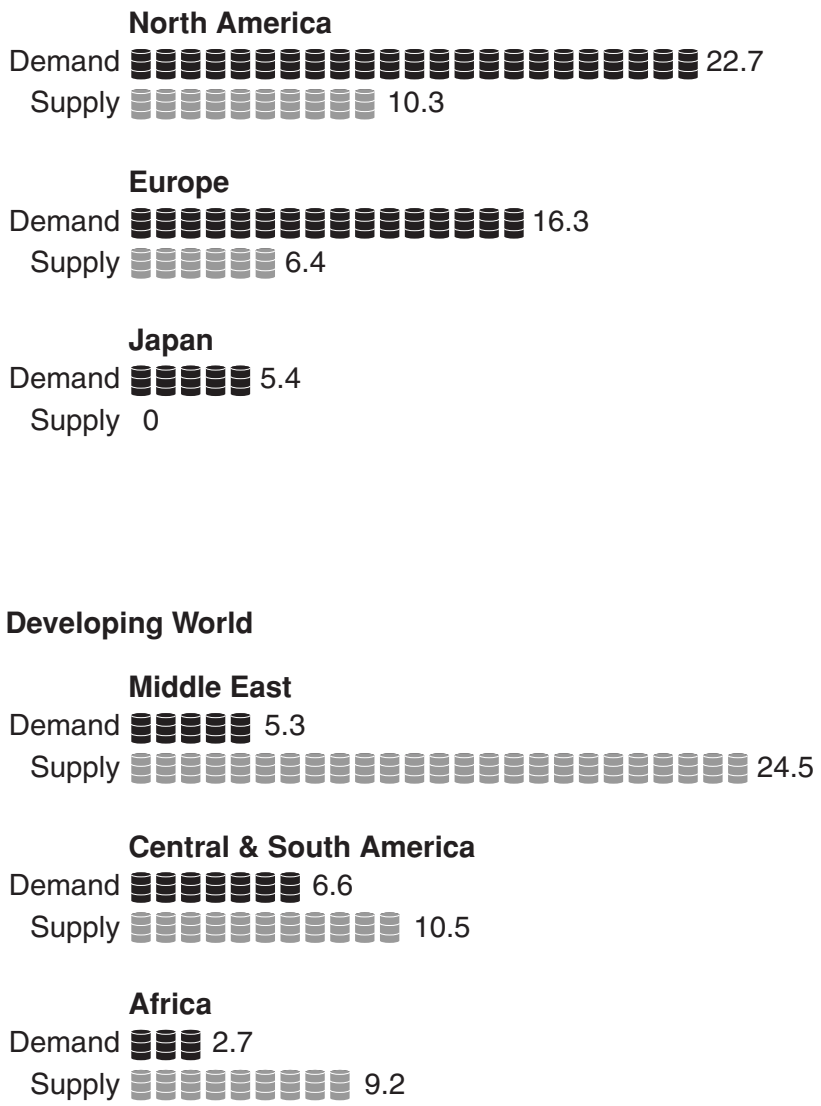
.....[1]

(b) The graph below shows world oil supply and demand in developed and developing regions.

World oil – supply and demand (2004)



Calculate the difference between supply and demand in

(i) North America

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(ii) The Middle East

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(iii) How important is the Middle East as a supplier of oil to other regions of the world? Explain your answer.

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(iv) Describe the types of environmental damage that result from transporting oil by pipelines and tankers. Refer to an example in your answer.

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(v) Explain why some oil spills can be cleaned up more quickly and effectively than others.

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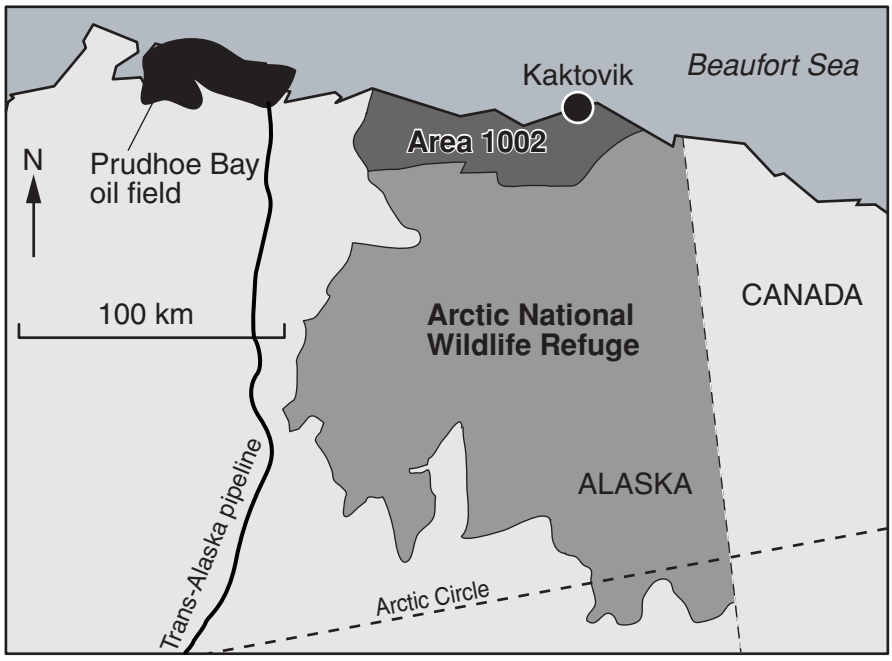
(c) In 2005 the US government gave the go ahead for oil exploration and extraction to start in the Arctic National Wildlife Refuge.

Arctic National Wildlife Refuge



Fact File
Arctic National Wildlife Refuge

Established
1960

Size
7.7 m hectares

Climate and vegetation
Tundra

Inhabitants
Less than 300 people, mainly Inuit

Way of life
Hunting, fishing and whaling

Wildlife
Polar bears, caribou, musk ox, grizzly bears, wolves, arctic foxes, snow geese and many migratory birds and whales

Mineral resources
Oil in Area 1002 (0.7 m hectares of land)
Estimated oil reserves 6 bn to 16 bn barrels

(i) Describe the characteristics of the tundra climate and vegetation.

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.....[3]

(ii) The Arctic National Wildlife Refuge was set up because it is a *wilderness*. A wilderness is an area of undeveloped land which is still natural.

Describe how the map and information in the Fact File show that at present the Arctic Refuge is a wilderness.

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(d) People have widely different opinions about the decision to allow oil exploration in the Arctic National Wildlife Range.

President of the USA

'We will get some extra oil reserves. It will make America less dependent on oil from overseas.'

Politician from the opposition party

'Is it worth losing a natural treasure for ever, one of our last great wild places, for a few months' supply of oil? A 10 bn barrel oil field is only about six months' supply of oil for the energy-hungry USA.'

Politician from Alaska

'Modern methods of drilling are far less damaging to the environment and that is a fact. It will replace our oil imports from the Middle East for many years. Only a tiny part of Alaska will be affected.'

President of a Wildlife Society

'There are certain places in the world where oil drilling and industrial development should never be allowed. The Arctic Refuge is one of them. Americans should unite to protect our country's most beautiful places.'

Inuit living in the village of Kaktovik

'I'm all for it. I have a young daughter and hunting and fishing are not enough to keep her housed, clothed and educated. I need a job now and oil is all that we've got. I would prefer to get a job as a tourist guide, but when they tried eco-tourism, very few tourists came. It is too remote and the climate is too harsh for them.'

(i) Describe the economic and environmental arguments made by those people who support the decision to allow oil extraction in Area 1002.

Economic

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Environmental

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(ii) Explain your opinion about whether new oil extraction in Alaska should be allowed.

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[Total: 40 marks]

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